TEACHING AND LEARNING WITH TECHNOLOGY, 2/E

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0-205-42998-X Exam Copy ISBN
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The pages of this Sample Chapter may have slight variations in final published form.
This chapter addresses these NETS:

I. **Technology operations and concepts**
   *Teachers demonstrate a sound understanding of technology operations and concepts. Teachers*
   A. demonstrate introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Education Technology Standards for Students).
   B. demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.

V. **Productivity and professional practice.**
   *Teachers use technology to enhance their productivity and professional practice. Teachers:*
   A. use technology resources to engage in ongoing professional development and lifelong learning.
   B. continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
   C. apply technology to increase productivity.
   D. use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.
Imagine that your school district has decided to conduct a districtwide upgrade of technology in the coming year. As a result of this initiative, you have just been given five new computer systems for use in your classroom. The computer-support department tells you that the district will make a variety of administrative software packages available to you. Will you know how to use them? Will you know how to apply them to improve the teaching and learning environment in your classroom?

As you can see, the understanding of computer hardware that you gained from Chapters 3 and 4 is only half the challenge for a computer-using educator. You must be just as competent when it comes to understanding and selecting the software programs that will run on that hardware. This chapter will lead you through an exploration of administrative software and how its types of programs can assist you in your professional responsibilities, from managing your classroom to helping your students learn. It will also help you gain the skills you need to effectively evaluate and select the software that will help you do your job and benefit your students.

In Chapter 5, you will
- Explore the differences between administrative and academic software
- Identify how various types of administrative software can help you be more effective and efficient in carrying out your professional responsibilities
- Examine how the major types of administrative software can be used to enhance the learning environment

**CHAPTER OUTLINE**

- Real People, Real Stories
- What Do Educators Need to Know about Software?
- Evaluating and Using Productivity Software
- Evaluating and Using School and Classroom Management Support Software
- Software, Teaching, and Learning: A Practical Approach
- Real People, Real Stories
• Explore key theoretical frameworks relating to the use of software in teaching and learning
• Investigate and use methods for reviewing and evaluating software so that your technology acquisitions will meet your needs

Meet Troy Robinson

In every school, everyone has an important job that contributes to support of the students who attend the school and to the effective operation of the school itself. Administrators, like teachers, often struggle to find the time and help that enable them to manage their critical role in school operations. Just as they can in the classroom, computers and software can lend a helping hand in the school office.

Let’s take a look at how one assistant principal managed his challenges through the application of useful productivity software. You will learn much more about this type of software as you read this chapter. You too may find ways in which it will help you address your challenges as a future or current teacher.

MY SETTING

My name is Dr. J. Troy Robinson. I have been an educator for many years and have worked as an elementary school teacher, a school administrator, and a professor in higher education. Of all my experiences, one of my most challenging jobs as an educator was as an assistant principal in a K–5 elementary school. At my school, I had responsibility for many aspects of the school’s daily business. Some of the more time-consuming undertakings involved keeping track of a variety of items and services, such as an inventory of textbooks and other instructional materials, records of student behavior-management activities (discipline), and the referrals and intervention strategies for at-risk students.

My school was a public elementary school in west Florida that served approximately 1,000 students. The students at my school were diverse in many ways. Academically, their test scores fell in every stanine on standardized tests.

The teaching staff consisted of thirty-nine classroom teachers, five exceptional education teachers (handling emotional handicaps, varying exceptionalities, specific learning disabilities, gifted needs, and speech), and one bilingual teacher. There were also three bilingual aides, six kindergarten aides, six custodial workers, and seven lunchroom workers. In the office, there was one principal, one assistant principal, one guidance counselor, and one media specialist. We also had an office staff that included three secretaries, one data-processing clerk, and one secretary for the media center. Together we formed the team that made our school successful.

In my role as the assistant principal, I worked with teachers in the implementation of the curriculum, maintained the school’s master schedule, administered the annual standardized testing program, and coordinated the inventory and acquisition of instructional materials. I also worked with other members of the administrative staff, teachers and aides, parents and guardians, bus drivers, and lunchroom aides in the supervision of students and the administration of the schoolwide cooperative discipline plan. With so many responsibilities, I was always on the lookout for technology supports that could help me meet the challenges during our busy school days. I found that some of the basic productivity tools I had learned about in college proved to be some of my biggest helpers.

Every day I found that productivity software helped me get the job done. I used word processing for most aspects of my daily work as an assistant principal. I used PowerPoint for presentations to the faculty and parent groups. Email was a daily communication link with teachers and support staff. I learned to greatly value the computer and related technologies that were available to me in my school setting.

One of the most challenging tasks that I performed each year involved summer school. In this district, the assistant principal was responsible for the preparations prior to the end of the regular school year and the complete oversight of summer school during its operation. I accomplished this job during my first two years as an assistant principal with only the use of word processing. Form letters were used to notify parents about each student’s eligibility and other important information, such as hours and days of operation, teacher and room assignments, and bus schedules. The rosters of each homeroom were used to manually notate students’ eligibility criteria. Classroom teachers assisted with this process at the end of second and third quarters by providing updates with copies of the students’ report cards. A count of eligible students was derived from these rosters. Preparing for summer school was a complex and time-consuming job.

I used technology regularly in performing the wide array of daily tasks in my job, including many different kinds of software in addition to word processing, so I thought that some of those same soft-
ware packages might be useful to help me with summer school. I
needed help with keeping track of kids who might need to go to
summer school, determining eligibility by analyzing established cri-
teria, maintaining records of communications with parents, estab-
lishing the schedule of classes and assignment of teachers, and per-
sonalizing the final notification to students and parents. There were
many details throughout this five-month process that defied manual
tracking in such a large school. I wanted to find a way to use tech-
ology that would make these tasks easier.

In previous years, the teachers and I had manually kept track of
the at-risk students in each homeroom. We had not seen the need
for a database, even though I knew the use of a database was a pos-
sibility. At that point, it seemed that learning to use a database would
have simply slowed the process down. But as I faced the planning for
summer school during my third year as an assistant principal, two
significant changes made the task even more complicated. Grade-
level expectations were introduced, and specific criteria for demon-
strating mastery of the expectations were established. The school
board and instructional supervisors mandated that all students who
had not demonstrated mastery of the grade-level expectations would
be required to attend summer school. This caused the number of
students expected to attend summer school to increase dramatically.
Additionally, my school was designated as the summer school site
for gifted students from three other schools in the northeast part of
the district. Over 200 additional gifted students would be coming to
my school.

With these changes, continuing a manual tracking process was
no longer an option. It was time to turn to technology to see if there
was a better way.

The application of the right software package at the right time can
solve pressing challenges for both teachers and administrators. In
this chapter, you will learn much about the kinds of software that
are available to you to help you meet the challenges you will face
as a teacher. After you know a bit more about software, we will
check back in with Dr. Robinson at the end of this chapter to see how
he managed his summer school challenge.

SOURCE: Interview with J. Troy Robinson conducted by Al P. Mizell. Reprinted by
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What Do Educators Need to Know about Software?

The understanding that you gained from Chapters 3 and 4 relating to the use of com-
puter hardware in teaching and learning is the first step in a two-step process leading
to the computer competencies an educator needs. The second step is to be able to iden-
tify, evaluate, and apply computer software to the direct and indirect tasks associated
with teaching and learning. The use of computer hardware and software is really just
making use of electronic tools to extend our capabilities. Just as a rake or a tractor can
help a farmer produce crops more efficiently, the effective application of electronic
tools can make us more productive educators.

Whether an educator needs to use software as a tool to create a letter to send home
to parents or to turn a computer into a tireless student tutor, being able to select and
use the best software package for the task is a skill every educator needs. The ability to
evaluate software is especially valuable when you are selecting software specifically
designed to assist educators. It is the educator’s expertise in teaching and in learning
that ensures that the programs acquired by a school address the specific, targeted com-
petencies that have been articulated through the instructional design process. Educa-
tors must be sufficiently software-literate to be able to recommend software that can
help their students learn and then be able to serve as guides through the software
acquisition and implementation process.
Computer software can be divided into two major categories. The first category is **administrative software**, that is, software that assists an educator in accomplishing the administrative, professional, and management tasks associated with the profession. The second category is **academic software**, or software that assists both educators and learners in the teaching and learning process itself. Both types of software are important tools for educators in helping them work efficiently and effectively as classroom managers, educational professionals, and, ultimately, architects of the learning environment. This chapter focuses on the use of administrative software for teacher productivity and for classroom application. Chapter 6 more fully explores academic software.

The critical role of software in education is consistent with the role of software in many other aspects of contemporary life. Few businesses could do without the use of software. Word processing has become as critical a skill as typing once was. Spreadsheets are essential for accounting, budgeting, and other financial tasks. The use of the Internet and its support software for information, sales, and communication is as commonplace as the use of a library or telephone. For teachers, the role of software is no less important for their administrative and academic tasks. Standards, today’s measure for effectiveness in education, have even been developed to specifically address the use of software by educators. ISTE’s NETS (Appendix 1) emphasize the importance of being able to use software appropriately for teaching, learning, and productivity.

Given the recognized importance of software in education, it becomes necessary for every educator to develop sufficient software literacy, that is the ability to effectively identify and use appropriate software. To do so, an educator must be able to locate and review software options in order to select the software package that will accomplish the desired task. Then, you must be able to objectively evaluate the software to see whether it indeed fills your need. Resources for the acquisition of educational technology are typically very limited, and careful purchases will make those limited resources go much further. Once the software has been acquired, you might even need to install it on the hardware you have available to you. Finally, so that you and your students can get the most out of the software, you will need to become familiar with how it works. If this sounds like a somewhat time-consuming process, that is because software evaluation, acquisition, installation, and training are indeed extensive tasks. The up-front investment of time and energy in this process, however, will make the difference between the acquisition of valuable educational tools and the purchase of software that looked good on first inspection but ended up gathering dust in a storage closet.

To begin the exploration of software, we will first examine administrative software, the programs you might use in accomplishing tasks associated with your teaching and professional responsibilities as well as classroom management. Administrative software can be divided into two general software types (see Table 5.1). These are productivity software and school and/or classroom management support software. **Productivity software** is typically generic business-application software that educators can use and adapt for the administrative and professional tasks they must address. Word processing, spreadsheet, and database management software are all examples of productivity software. In contrast, **classroom management support software** is usually customized software written for educators to help them manage school and classroom tasks, including the creation and maintenance of seating charts, class rolls, student records, or school budgets.

All these administrative software tools help educators do their jobs more effectively and productively. Because a fairly significant time investment is involved in finding, installing, and learning software, you should be cautious in your selections. That is the reason software evaluation skills are so important for computer-using educators. This chapter includes evaluation rubrics to assist you in this critical process.
Administrative software can be purchased as an off-the-shelf commercial package or as a custom-made program, or it can be acquired as freeware or shareware. Freeware is software that is offered to users without charge; shareware is software that is offered to users for a small fee or for a limited time, and is sometimes paid for on the honor system after you have had a chance to try out the software and determine whether it is useful for you. Freeware and shareware present a great temptation for educators on a very constricted budget. Even though many fine administrative software tools are offered as freeware or shareware, they too must be carefully evaluated. Low-cost or no-cost software still costs you the time and effort it takes to install and learn the software. When making software decisions, it is useful to complete a rubric like those included in this chapter (Tables 5.6 and 5.7) comparing products to determine the features and value of each program you plan to purchase. Rubrics help you to objectively determine the effectiveness of the software. Freeware and shareware can be found on many education sites on the Internet, often along with some annotation or review of the software’s quality.

### Evaluating and Using Productivity Software

Much of an educator’s time is consumed in completing the many administrative tasks necessary to prepare and maintain an effective learning environment and to meet the record-keeping demands of the typical school system. The office productivity software that has facilitated business operations can frequently serve educators equally well for their administrative educational tasks. Such software is typically designed for ease of use.

#### TABLE 5.1 ADMINISTRATIVE SOFTWARE FOR EDUCATORS

<table>
<thead>
<tr>
<th>Software Type</th>
<th>Administrative Tasks</th>
<th>Professional Tasks</th>
<th>Teaching and Learning Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity Software</td>
<td>Assists educators in preparing memos, letters, reports, and budgets</td>
<td>Assists educators in tracking student information, computing grades, and preparing lesson plans and IEPs</td>
<td>Helps educators create student activity sheets, transparencies, grade reports, and parent letters</td>
</tr>
<tr>
<td>Classroom Management Support Software</td>
<td>Assists educators in reporting required student information</td>
<td>Assists educators in gathering data for student reports</td>
<td>Assists educators in gathering data for academic decision making</td>
</tr>
<tr>
<td>Productivity Software</td>
<td>Helps educators prepare required reports</td>
<td>Assists educators in tracking and reporting grades; helps create seating charts, rolls, and other classroom tasks</td>
<td>Assists educators in analyzing grade and student data for better academic decision making</td>
</tr>
</tbody>
</table>
use, with each application performing a unique function for the user. And, although created for different purposes, productivity software programs are typically created with a similar look and feel so that it is easy to learn one type of software and then apply the same skills to learning another software package produced by the same vendor. On your Companion CD, you may want to try the Office Skills Builder activity to experience the format and skills associated with one of the most common types of productivity software groups, Microsoft Office.

The four major types of productivity software found in most business environments are word processors, electronic spreadsheets, database management systems, and presentation software. These types of software can be purchased in individual packages or in application suites and are designed to run on either a PC or Macintosh platforms. Often, a school system will equip the administrative component of its operation with productivity software, which teachers can adapt to address educational tasks. The district will often purchase a site license, that is, a license that allows the use of a software package on all machines at locations associated with one organization. The acquisition by district or school computing departments of a site license for productivity software for administrative purposes can benefit the educational staff as well. Although individual educators may have little choice in what productivity software is available to them, with a bit of creativity, that software can be applied to myriad teaching and professional tasks. Office productivity software, used in the classroom or other academic spaces such as the media center or faculty workroom, can be a great asset to busy educators. The computer-using educator’s job is to learn to use the software and apply it to the many nonteaching tasks for which he or she is responsible. Let’s look at the characteristics of the “big four” applications (word processing, spreadsheets, database management, and presentation software) that are included in office software suites and explore how educators can use each of them (see Table 5.2).

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**TABLE 5.2 PRODUCTIVITY SOFTWARE SUMMARY**

<table>
<thead>
<tr>
<th>Software Type</th>
<th>Application to Administrative/Professional Tasks</th>
<th>Application to Teaching and Learning Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORD PROCESSING</td>
<td>Prepare letters, memos, reports, flyers, rubrics, lesson plans, forms, and newsletters</td>
<td>Prepare transparencies, activity sheets, posters, study guides, and class notes; help students prepare stories, essays, and group reports; use in class to dynamically illustrate writing and outlining skills</td>
</tr>
<tr>
<td>ELECTRONIC SPREADSHEETS</td>
<td>Prepare budgets, numeric tables and summaries, grade and attendance rosters, and compute grades; prepare visuals (charts) of numeric data</td>
<td>Provide students with a method for tracking and analyzing data and creating charts from it; demonstrate what-if analyses visually; support student research such as tracking stock market data</td>
</tr>
<tr>
<td>DATABASE MANAGEMENT SYSTEMS</td>
<td>Organize and track student and other professional data; prepare inventories, mailing lists, and reports</td>
<td>Organize and provide easy access to lists of academic resources; provide support for students tracking data; extract and report targeted summaries of content or resources to address student needs</td>
</tr>
<tr>
<td>PRESENTATION SOFTWARE</td>
<td>Create presentations for workshops, conferences, and meetings</td>
<td>Create class lecture support that features text, audio, and visual elements with special effects; produce transparency masters; create student worksheets to accompany class lectures</td>
</tr>
</tbody>
</table>
Word Processors

Word-processing software is the most commonly used computer application. Computers loaded with word-processing software have all but replaced typewriters for text-oriented tasks, although the typewriter still has a niche in the completion of noncomputerized forms. Today’s word processors, however, are capable of doing far more than even the most advanced electronic typewriter. In addition to creating, editing, and printing documents, these software packages are capable of desktop publishing, creating and editing graphics, and developing web pages. Combined with a relatively inexpensive color ink-jet printer, word-processing software packages are also powerful tools for creating full-color transparencies, classroom signs and posters, customized certificates and awards, and even personalized stickers and buttons (see Figure 5.1). Of course, they are also essential tools for creating tests, student worksheets, and memos.

Unlike most typewriters, word-processing programs maintain large amounts of data in an electronic format until it is ready to print out. This allows educators to store and easily update or modify the many documents they use in the daily administrative tasks that are a part of every educator’s job. Word processing offers educators a way to easily file and access electronic documents and then to modify and update them with little effort. Furthermore, word processors typically include a built-in capacity to check grammar and spelling and an interactive thesaurus, which make this software application a valuable tool for every educator.

Most word-processing packages share several significant and useful features. These can be broadly grouped in terms of the word-processing functions they enhance. These functions include document preparation and editing, desktop publishing, and archiving and printing.

On your Companion CD, each of these functions is explored. As you try each of the word-processing exercises, you will experience and practice the unique and powerful functions built into one of today’s most popular word processors, Microsoft Word.

Figure 5.1
Word Processing in the Classroom
Word processors can create flyers and transparency masters in addition to text documents.
• **Document Preparation and Editing**

Document preparation is the most common use of word-processing software. This function enables the user to type data into the software and then edit the data while it is still in the electronic format. Error correction, adjustments to the document’s text, and experimentation with different fonts and formats can be completed before the document is printed on paper (i.e., in a hard copy). Editing features may vary with the complexity of the word-processing software, but all word processors include the following key features. You will practice using many of them when you try the Bake Sale Flyer Word Skills Building activity on your Companion CD.

• **Insertion and Deletion of Text.** The cursor, or insertion point, that is displayed on the word-processing screen indicates the point at which text will be entered. As a document is created, the cursor typically stays at the end of the data and moves along as additional text is entered. By using the computer’s mouse or arrow keys, the user can move the cursor back or forward to any point in the body of the document. By positioning the cursor at a targeted spot in the document, you can either insert additional text by typing it in at the cursor position or remove unwanted text by pressing the Backspace or Delete key on the computer keyboard.

• **Text Selection and Enhancement.** Once a document has been entered, specific letters, words, paragraphs, lines, or whole pages can be selected. Text selection is accomplished by using the mouse to point to the desired text and then dragging the cursor across it. The selected material will be highlighted in reverse color. Once text is selected, the word processor is ready to apply subsequent commands to that portion of the text only. Enhancement commands include changing the type size or font used or adding visual augmentation, such as changing normal text to bold, italics, or underlined text. After selecting text, enhancing it is typically a matter of pointing and clicking on the software button representing the enhancement desired or using a keyboard command.

• **Word Wrap and Formatting.** When you type on a traditional typewriter, it is necessary to move the paper carriage back to its start position and down one line after completing each line of type. Word processors eliminate this step with their word wrap feature. With word wrap, when the text reaches the end of the line, the software automatically moves down to the beginning of the next line in preparation for additional input. If a word does not quite fit on a line, the software will recognize this and move it down to become the first word on the next line. This feature is especially useful when you decide to insert additional text. The software makes room for the inserted text by wrapping all subsequent lines down the page. Page formatting features allow you to change the look of the page, such as changing margins, adding headers and footers, or altering line spacing on all or part of the document. Such page changes may cause the text in any given line to move. The word wrap feature will once again automatically adjust the text and line length to accommodate such formatting changes.

• **Spelling and Grammar Tools.** The most popular of the common word-processing features include built-in spell checker, grammar checker, and thesaurus. The spell-checker will check spelling word by word against a built-in dictionary of thousands of words and suggest alternatives to words it does not recognize. This same dictionary can be used as a thesaurus to provide both synonyms and antonyms of selected words. Finally, the software is created with recognition of proper grammar and sentence construction. The software can check a document and find sentences that are questionable grammatically and make suggestions for alternative sentence construction.
- **Copy, Cut, Paste, Drag, and Undo.** Editing functions in word processors provide the user with the ability to select letters, words, or blocks of text and then remove them from the document or move them to a different location within the document. The *copy* feature creates a duplicate version of the selected text, which can be *pasted* elsewhere. The *cut* feature removes a block of text from its original location permanently. The material can then be pasted into another location. Some word processors have combined a cut-and-paste function into a single feature called *drag and drop.* This feature allows you to select text anywhere in the document and, using the mouse, drag and drop it anywhere else in the document. Finally, the *undo* feature provides a safety net against mistakes. It allows the user to back up and undo the last several actions.

- **Desktop Publishing**
  Most word processors include the ability to manipulate the look of a page. By using this feature, an attractive arrangement of graphics and text on a page can be created and manipulated with a few clicks of the mouse button. Although word processors can perform some desktop publishing tasks, they cannot perform the extensive adjustments to page displays that dedicated desktop publishing software can make. The basic desktop publishing capabilities included in most word processors are summarized here:
  - **WYSIWYG Displays.** Word processors are able to display a document on the screen in a “what you see is what you get” (WYSIWYG) format. This feature allows the user to preview a document and see exactly what it will look like before it is printed out.
  - **Graphics and Clip Art.** Most word processors today include rudimentary graphics capabilities that allow you to add and position a drawing on a document page. The creation of a complex or custom graphic is typically done with dedicated graphics programs, but most word processors include a library of clip art (ready-made artwork) that can be inserted into a document. Additional clip art can usually be added to the word-processing clip art library. The size and position of this artwork can then be changed, thus adding interest to an all-text document.
  - **Tables and Columns.** Text data can easily be arranged into multiple columns of data per page or into a table or grid. These word-processing features give the user the ability to organize data, with just a few clicks of the mouse, into something other than a narrative. Once the data is in table or column form, all of the typical text enhancements can be applied.
  - **Autoformats.** Tables, columns, and documents can be formatted in many different ways. Borders can be added, titles can be enhanced, and graphics can be placed in any type of document. For users who do not have the time or experience to experiment with formats, many word processors include an autoformat feature. This feature lets you preview the look of various styles that can be applied to a document and then select the one you like best to use with your document. Once selected, the format is automatically applied to the entire document under construction.
  - **Word Art.** A fairly recent addition to word processors’ publishing features is the ability to create fancy, colorful titles. This word art feature offers you the ability to add color, shapes, and styles to a document’s title or to make sections of your document stand out.

- **Archiving and Printing**
  Once a document is completed, word processors provide the ability to save the document in numerous formats and to print it out in black and white or color, depending on the available printers. Archiving or storing a document to a floppy or hard disk...
stores the text you typed, along with all of its related formatting commands, in a single word-processor file. The formatting commands are called word-processing codes. These codes vary with the type of word processor used. Because there are many types of word processors, you may find that a file you create with your word processor is different in appearance or even unreadable when you open it in another type of word processor. This problem of readability or compatibility may be overcome if a word processor contains a document conversion program as a part of its program code. Even if it does not, almost every word processor provides “Save As” choices. To save a document in other formats, after selecting Save As from the File menu, you will see a dialog box that typically provides you with a choice of formats. This feature, sometimes referred to as exporting a document, lets you save the same document in multiple formats depending on the other types of word processors that read it.

The final feature shared by all word processors is the ability to print documents. One of the sets of word-processing codes saved with every document is information about the type of printer to be used to print the document out. Because a number of types of printers are available, the printer that is set up as the default printer for the word processor will be used automatically unless you instruct the program to do otherwise. Some formatting features may change when printer defaults change, thus unexpectedly changing the way your document looks. It is therefore important to save your document with the appropriate printer settings to avoid such conflicts. Of course, as you learned in Chapter 3, printers can just as easily output crisp laser copies as they can colorful transparencies, depending on the specific capabilities of the hardware.

• Ready-Made Word-Processing Tools

Because word processors are such commonly used tools in education, educators have developed many documents, templates, and macros. Templates are documents that are preformatted for a specific use but contain no data. An example of a template

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**IN THE CLASSROOM**

The Business of Writing

**Word processing has proved to be a valuable tool for grammar instruction, given that students of all ages enjoy working on computers. Philip Dodge, who teaches at Elaine Wynn Elementary School in Las Vegas, Nevada, teaches grammar by showing children how to recognize grammatical errors and fix them using a word processor. Working in pairs, children are given a short story prepared by Mr. Dodge. The story contains typographical, semantic, and editorial mistakes of the kind studied in language arts class. Using Cut, Copy, and Paste, the children revise the incorrect copy. They then insert a relevant image from the File menu or Clip Art button into the revised text.**

**Big books and word processing form a winning combination for Susan Renner-Smith’s first graders as they learn vocabulary. “I use my classroom computer monitor as a visual aid!” she writes. The children gather around the computer where Ms. Renner-Smith first shows them the pictures in a big book. She covers the words with blank sentence strips. Then, turning to the computer and a word-processing program with a font large enough to be visible to all, she lets each child in a round-robin dictate a sentence to tell the story as they see it by looking only at the pictures. As they talk, she types the sentences and places their names in parentheses. The children decide on a title for their story, and their version is saved on a disk. Ms. Renner-Smith then reads the actual text of the book to the children so that they can compare their story to the original. She says, “By simply changing the color and increasing the font size of the words they use, I am increasing my first-graders’ sight vocabulary and helping them to connect with a story before reading.”**

Not only teaching but also testing can be varied by using word-processing software. Stephanie Moore, a former instructional technologist for the Jennings, Missouri, schools, tells how interactive tests can be created with Microsoft Word. The advantages that result from word-processing quizzes and tests are time-saving templates that can be reused, accessibility to the tests on computers, printouts for grading, and, if desired, hard copies of the tests to be given in the traditional way.

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might be a meeting announcement flyer. To use it, you would open the template with your word processor to find a fully laid-out flyer. With this premade document open, you would only need to type in your organization’s name and the date and time of your meeting. You can also create templates for your own future use. When you complete Word Skills Builder, Rubric Template (on your Companion CD), you will be creating a template you can use ________ in your classroom.

You can also modify a template further if you want to. A word-processing macro is a prerecorded set of commands for your word processor that automates a complex task such as formatting output to fit on labels. Macros are stored in files that can be retrieved and activated with a few keystrokes. An example of a macro might be a file that automatically sets up the official school letterhead using the school’s logo and name. Very often, such predesigned templates and macros are freely shared among educators across the Internet.

Software is a medium of communication. To communicate easily and with accuracy within a designated environment, such as a school or school district, a decision must be made as to how to establish a consistent and unified system of software. Potential incompatibility exists across platforms, for example, between Apple computers and IBM-compatible PCs or between different software vendors. In fact, unless programs are designed to be totally cross-platform and totally capable of conversion between software vendors, users of one type of software will not be able to translate and/or use software created by other users within the organization. It is as if you were in a rural, isolated Chinese village and tried to communicate in English or as if you were fluent in only one of the many Chinese dialects and were able to pick out only a few words or phrases. So it is with software. All communicants need to be using the same “language.”

From an economic perspective, there are additional reasons for an organization to use common software. It is clear that technology resources are scarce, so their wise use becomes an imperative. Arguments for commonality involve cost, accessibility, time, support, and training. The cost of duplicating programs and their support to cater to individual preference is prohibitive. Site licenses for basic programs represent considerable savings over single-license purchases or even purchases for small groups of users.

Support issues for multiple types of software are many. If multiple types of word processors are implemented, for example, the support staff must know how to install, use, and troubleshoot each type to support its users. They must also ensure that all the types of word processors are fully compatible with the range of equipment found at a typical work site. Multiple word processors also affect the effectiveness of network management. Maximizing the power of networking makes more software available to more people in the most cost-effective way. Time and effort can be saved by centrally managing common software rather than installing and supporting networked versions of a variety of word processors.

A final issue involved in installing multiple, platform-specific types of software is the training issue. Teachers who are new to a system must be offered adequate training opportunities to ensure that they can use the software available to them. Too great a variety of software taxes training resources beyond their capacity. Common software decisions allow training to be targeted, frequent, and at the depth the user needs.

For the classroom teacher, when software is consistent, communications and sharing are maximized. Newsletters, calendars, grade reports, and classwork can be presented and shared in a format that is consistent in content and design. For administrators, alignment of administrative and teaching tasks can be achieved only with software that is consistent. If many different programs are in use, there is not enough common ground on which to ascertain performance.

Consistency makes pragmatic sense in the quality and reliability of the services the software delivers and the ease with which these services can be rendered to the greatest number of users at the lowest cost. So although you may have learned a different word processor before coming to work at a school, it is important to be open to alternatives. As in many aspects of teaching, flexibility is an important characteristic for any teacher. This is no less true in dealing with technology.
A final tool built into most word processors is a wizard. A wizard is a miniprogram that creates a customized template for you. It asks a series of questions about the format you desire for your document and then creates a custom template as you respond to each question. Wizards will help you create sophisticated documents without having to know how to issue complex formatting commands.

• **Word Processors in the Classroom**

Word processors offer great promise as a teaching tool as well as a productivity tool for busy educators. The same features that facilitate the creation of memos and tests can be creatively applied to teaching and learning. The application of these features to teaching and learning is summarized in Table 5.3. There are numerous examples of the creative ways in which teachers have applied the same word processing software they use for productivity tasks to teaching and learning as well. Teachers use word processors to make calendars, publish class books of poetry, create newsletters, prepare flyers, make class stationery, and even author classroom web sites. The In the Classroom feature on page 000 features just a few innovative teacher-developed applications of this common productivity software. Many more can be found in an exploration of the web and through On the Web! Activity 5.2.

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**Electronic Spreadsheets**

Electronic spreadsheet software is to numeric data what word-processing software is to text. With an electronic spreadsheet software package, you can organize, input, edit and chart data, and produce accurate professional reports for any administrative task that deals extensively with numbers. Spreadsheet software not only allows you to organize numeric information, but also has built-in mathematical and statistical formulas that can be applied to the data with just a few clicks of the mouse button. Whether adding long columns of data or computing a complex weighted-averaging formula, electronic spreadsheets complete your mathematical tasks at lightning speed and with total accuracy. With a spreadsheet, budgets can be easily developed and modified, grades can be tracked and averaged, and class statistical information can be extracted. Furthermore, most spreadsheets include built-in graphing capabilities that can turn numeric data into colorful, three-dimensional pie, bar, or line charts that will visually illustrate numeric relationships.

One of the key advantages of electronic spreadsheets over their manual counterparts is in their accuracy. Given accurate data, a spreadsheet will always produce accurate results. A second advantage is the fact that spreadsheets can be modified easily. Consider as an example the grade-level media budget pictured in Figure 5.2. If it had been done manually and the cost of printer cartridges turned out to be $10 instead of the budgeted $8, you would have to erase and recalculate a number of different entries on the spreadsheet. With an electronic spreadsheet, however, you would only need to type in the new value, and all the other entries associated with that value would be automatically recalculated. This time-saving feature makes electronic spreadsheets easier to use, less time-consuming, and far more accurate than doing the calculations manually.

Several software vendors produce electronic spreadsheet programs. Some of these, such as Microsoft Excel or Lotus, are powerful, business-oriented software packages that have numerous features. Others are for home or general consumer use, such as the spreadsheet component of AppleWorks, ClarisWorks, or Microsoft Works. Regardless of the capabilities of any given spreadsheet package, they all have a full range of common features.

Your Companion CD demonstrates and provides you practice with Excel, one of the most common of all electronic spreadsheets. When you try the Excel Skills...
<table>
<thead>
<tr>
<th>Word-Processing Feature</th>
<th>Application to Administrative/Professional Tasks</th>
<th>Application to Teaching and Learning Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOCUMENT PREPARATION</strong></td>
<td>Provides capabilities to</td>
<td>Allows students to</td>
</tr>
<tr>
<td></td>
<td>• Enter documents</td>
<td>• Create organized documents</td>
</tr>
<tr>
<td></td>
<td>• Edit documents</td>
<td>• Edit errors easily</td>
</tr>
<tr>
<td></td>
<td>• Format documents</td>
<td>• Add graphics and enhanced text elements</td>
</tr>
<tr>
<td></td>
<td>• Correct grammar and spelling</td>
<td>• Print draft copies for review and proofreading</td>
</tr>
<tr>
<td></td>
<td>• Enhance with graphics</td>
<td>• Finalize, correct, and print final copies</td>
</tr>
<tr>
<td></td>
<td>• Print color and black and white</td>
<td><strong>DESKTOP PUBLISHING</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provides or lets you create formats for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Forms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Flyers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Invitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Newsletters</td>
</tr>
<tr>
<td><strong>FORMATTING</strong></td>
<td>Lets you adjust documents for</td>
<td>Students can</td>
</tr>
<tr>
<td></td>
<td>• Professional appearance</td>
<td>• Experiment with formats for best presentation</td>
</tr>
<tr>
<td></td>
<td>• Emphasis on key points</td>
<td>Teachers can</td>
</tr>
<tr>
<td></td>
<td>• Consistency of appearance</td>
<td>• Create appealing documents for their students</td>
</tr>
<tr>
<td></td>
<td>• Letterhead and memo styles</td>
<td>• Alter documents to meet specific learning needs</td>
</tr>
<tr>
<td><strong>GRAMMAR CHECKING</strong></td>
<td>Helps to ensure that documents are grammatically correct.</td>
<td>Assists students in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Proofreading and correcting their work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Practicing the application of grammatical rules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assists teachers in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Demonstrating grammar corrections in real time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Helping students find and correct grammatical errors</td>
</tr>
<tr>
<td><strong>SPELL-CHECKING</strong></td>
<td>Helps to ensure that documents are free from spelling errors.</td>
<td>Assists students in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Proofreading and correcting their work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Practicing correct spelling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assists teachers in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Demonstrating spelling corrections in real time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Helping students find and correct spelling errors</td>
</tr>
<tr>
<td><strong>MAIL MERGE</strong></td>
<td>Provides an easy way to make form letters personal.</td>
<td>Can be used by teachers to individualize reports to students and letters to parents.</td>
</tr>
<tr>
<td><strong>TABLES</strong></td>
<td>Provides tools to present information professionally, concisely, and clearly in an organized format.</td>
<td>Assists students in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Organizing data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Presenting data clearly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Summarizing key data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assists teachers in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Creating clear summaries for study guides</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Displaying organized data in support of presentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Teaching interpretation of data</td>
</tr>
<tr>
<td><strong>WEB FORMAT</strong></td>
<td>Converts files from documents to web format so that they can be easily added to web sites.</td>
<td>Allows students and teachers to create documents and save them in web format for display on a class web site without knowing any HTML.</td>
</tr>
<tr>
<td><strong>ARCHIVING</strong></td>
<td>Provides an inexpensive and easy-to-access archive system for documents.</td>
<td>• Saved teacher data files are easy to access and update to keep lessons current and available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Students can save files for later work or find and reprint lost hard copies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Archived files can easily be added to electronic portfolios.</td>
</tr>
</tbody>
</table>
Builders, you will have an opportunity to see firsthand how the features of this useful tool can be applied in your classroom for both administrative and academic tasks.

- **Spreadsheet Organization**

  Electronic spreadsheets, like their paper counterparts, organize data into vertical columns and horizontal rows. The user then types in alphabetic or numeric data in the appropriate locations. This organizational structure provides the framework for lining up and clearly labeling numeric information.

  The intersections of spreadsheet rows and columns are called cells. It is in the nature and use of these cells that electronic spreadsheets have great advantage over their manual counterparts. Each cell of a spreadsheet can contain text, values, or a formula. This variety of cell content can be seen in Figure 5.2. The cells in column A all contain labels, and the cells in column B all contain data representing budget amounts. The cells in columns C–E contain labels, values, subtotals, or totals. Column D’s cells do not contain totals calculated by hand and then typed in. Instead, they contain instructions to the spreadsheet software directing it to perform a mathematical calculation—in this case, multiplying the data entered in columns B and C.

  This unique and independent data-handling capability of each spreadsheet cell makes it a quick and easy task to alter or correct the data entered. Furthermore, once a single cell’s data has been changed, that change will be reflected in all cells that use that data for a calculation. Thus, if the budget amount for lined paper in Figure 5.2 is changed, the print media subtotal will also be changed, as will all other related totals. This automatic recalculation feature is one of the key reasons why spreadsheets have become as popular a tool for handling numbers as word-processing software has become for handling text.

- **Formulas and Functions**

  As in all math, formulas are used in a spreadsheet to indicate the types of calculations that should be performed to achieve a specific outcome. The cells that contain instruc-
tions that tell the software to perform specific mathematical activities may, in fact, contain detailed formulas that the user has typed in. In addition to user-entered formulas, most spreadsheets contain hundreds of stored, premade formulas that the user can easily place into a cell. These range from formulas appropriate to finance and statistics to those necessary for trigonometry. These built-in formulas make it particularly easy to direct the spreadsheet software to perform complex mathematical tasks without the user having to remember the specific syntax of mathematical expressions. You will practice using formulas and functions in the Excel Skills Builder activity, Club Budget on your Companion CD. Once you are comfortable with the format, you will find electronic spreadsheets to be powerful and useful tools.

- **What-If Analysis**

Perhaps the most intriguing feature of an electronic spreadsheet is its ability to perform what-if analysis. Because some cells contain outcomes that are the product of the data in other cells, changes to that data can be immediately reflected in the product. For example, if a teacher is using a spreadsheet to compute grades, the teacher will have entered not only student grade data, but also the formula needed to reflect how those grades will be averaged or weighted. So if a student wanted to know what his or her average would be if the score on the next test were 100 percent, the teacher could enter the hypothetical 100 percent into the spreadsheet, and the student could see the result in terms of a final grade computation. This is a what-if analysis; that is, what if the student gets a grade of 100 percent—how will that affect the outcome? This is a valuable tool for both business and education. Some educators have students keep a spreadsheet of their own grades to motivate their achievement and to keep in constant touch with their grade in a course.

- **Charts and Graphs**

Another useful feature of almost all spreadsheet software is the ability to turn the data that has been entered into rows and columns into its graphic counterpart. The graphing (also called charting) function allows the user to select specific cells, and the software will automatically turn the data in those cells into an accurate graph in any number of formats from line, to bar, to pie charts. Some spreadsheet software even adds the ability to graph in color and three-dimensional shapes. For professional-looking displays and to assist visual learners, this spreadsheet tool is extremely useful. The Student Measurement Skills Builder activity on your Companion CD will demonstrate the instructional power of this feature.

- **Templates and Macros**

Like word-processing software, spreadsheet software makes use of templates and macros, allowing the user to create and reuse useful spreadsheet formats and commands. Spreadsheet templates and macros can also be found as shareware or freeware at numerous educational web sites. You can also create your own spreadsheet templates. Try the Excel Skills Builder activity Grade Keeper, on the Companion CD, to experience this feature.

- **Electronic Spreadsheets in the Classroom**

Table 5.4 shows how many of a spreadsheet’s key features can be used both administratively and in teaching and learning. Just as word-processing software can be repurposed for academic projects, so too can spreadsheet software. Whether a teacher uses a spreadsheet to track grades or a student uses a spreadsheet to collect and record data from an experiment, this software provides a wealth of possibilities to the creative teacher. See the In the Classroom feature on page 000 for just a few of the many creative activities that educators around the country have developed for using this software. Many more ideas are shared on the web. Try On the Web! Activity 5.4 to discover even more creative adaptations of spreadsheet software.
Every educator’s job includes the cumbersome tasks of organizing, maintaining, and retrieving many types of data. Whether it is a student’s home phone number or a school district’s targeted language arts objectives for the sixth grade, educators must be able to easily and quickly access and extract the information they need. The productivity software that accomplishes this type of task electronically is called a database management system.

Database management software offers educators an easy-to-use system for creating customized records to contain data, retrieving targeted records, updating and editing the information in those records, and then organizing clear and accurate reports from the data (see Figure 5.3). Furthermore, database software allows you to sort all your data automatically at the touch of a key or to query the database for a match to any single word or phrase. Considering the amount of information an educator must deal with, database management software offers many advantages over manual filing systems.

An electronic card catalog in a media center library is one example of the advantage of database management systems over manual systems. Consider for a moment the complexity of cataloging or locating a book using a manual system. In manual cataloging, a book must be cross-referenced on at least three different index cards under title, author, and subject. All of these must be typed out and manually sorted and filed. To find the book, the card catalog user must look through drawers full of cards until just the right card is located. For both the media specialist and the library patron, the process can be laborious. With an electronic card catalog that is a dedicated database management system of the library collections, the process is much simplified.
### Table 5.4

<table>
<thead>
<tr>
<th>Spreadsheet Feature</th>
<th>Application to Administrative/Professional Tasks</th>
<th>Application to Teaching and Learning Tasks</th>
</tr>
</thead>
</table>
| **SPREADSHEETS AND WORKBOOKS** | Allows for the preparation and display of clearly organized numerical data on individual spreadsheets and in workbooks or related spreadsheets. | Assists students in  
- Organizing numerical data  
- Creating and testing formulas  
- Formatting data to produce clear and concise reports |
| | | Assists teachers in  
- Organizing and reporting numerical data  
- Creating customized gradebooks  
- Tracking student data  
- Presenting clear reports |
| **AUTO-FORMATTING** | Provides premade formats to give a spreadsheet a distinct professional appearance. | Teachers and students can create appealing, professional-looking spreadsheet reports. |
| **CHARTING** | Provides easy-to-use tools for visual displays of numeric data. | Provides students with  
- A tool for visual presentation in student reports  
- A tool to view saved data visually for better understanding  
- A way to visually explore alterations of the numeric data stored in the spreadsheet |
| | | Provides teachers with  
- A tool for preparing visual reports of abstract mathematical relationships  
- A presentation tool to demonstrate numeric data visually |
| **FORMULAS AND FUNCTIONS** | Assists in preparing accurate calculations that will automatically adjust to changes in data. | Helps students  
- Create and test formulas  
- See changes in mathematical relationships as data changes |
| | | Helps teachers  
- Demonstrate mathematical concepts in action  
- Test and utilize appropriate grading formulas  
- Demonstrate to students how final grades are calculated |
| **WHAT-IF ANALYSIS** | Allows for the real-time demonstration of the impact of changes in data; e.g., budgeted amounts can be tested for different results. | Assists students in  
- Seeing how data changes impact outcomes in mathematical scenarios  
- Testing relationships and outcomes by manipulating data |
| | | Assists teachers in  
- Demonstrating changes and the impact of changes on variable values  
- Explaining how different test grades will affect a student’s final grade |
| **ARCHIVING** | Provides an inexpensive and easy way to store and access worksheets for budgets and other numeric files. | Saved data files are easy to access and update to keep records current; students using spreadsheets for math practice can retrieve as needed. |
All database management software contains key features to make the organization and manipulation of data easy. These key features are summarized in Table 5.5. Of course database management software packages vary significantly in the extent to which they can perform these functions, and powerful business database systems offer many additional features.

On your Companion CD, you will find activities that demonstrate and provide you practice with Access, Microsoft’s popular and powerful database management software. When you try the Access Skills Builders, you will have an opportunity to experience how the features of this powerful business tool can also be creatively applied in your classroom to your administrative and academic tasks.

- **Database Organization**

  In database management systems, a field is the electronic storage location in which a specific type of data is stored. In our library example, a field might contain an author’s last name in a Last Name field. A record is a collection of all related fields, such as a record that contains all the information about a specific book. A file is a collection of all related records, such as a file containing records representing all the books in a library. This organizational structure provides the facility to organize and manipulate data at both the macro and micro levels and to easily update and accurately maintain information.

  In our library example, the media specialist can simply type in the data representing a new acquisition in a new record in the media center’s database file. The database software automatically stores the new record. From that point on, the user can access that new record according to the data stored in any of the information fields on the record. By typing in a key word or phrase, the user can retrieve the desired record from the database. This electronic process is a fast and accurate data input and retrieval system.
### Table 5.5 Database Software in Teaching and Learning

<table>
<thead>
<tr>
<th>Database Feature</th>
<th>Application to Administrative/Professional Tasks</th>
<th>Application to Teaching and Learning Tasks</th>
</tr>
</thead>
</table>
| **Databases**    | • Allows for the definition of customized database formats.  
|                  | • Provides for inputting and storing large amounts of complex and/or cumbersome data. | Assists students in  
|                  |                                           | • Thinking through and creating logical data organizations  
|                  |                                           | • Easily entering data for subsequent organization and reporting  
|                  |                                           | Assists teachers in  
|                  |                                           | • Creating customized data organization that suits their specific needs  
|                  |                                           | • Managing student and content data  
| **Forms**        | Provides a format for support staff and aides to input data. | Teachers can create easy-to-use and familiar input screens for students to use.  
| **Reports**      | Tools and wizards create professional-looking output. | Assists students in  
|                  | Provide multiple levels of sorts to make data easy to comprehend. | • Presenting project data in a variety of attractive formats  
|                  | Provides for customized output through the selection of specific records based on predefined criteria. | Assists teachers in  
|                  | Provides an inexpensive and easy way to store and access data. | • Customizing output for each student, class, or lesson  
| **Sorting**      |                                           | Assists students in  
|                  |                                           | • Practicing alphabetizing skills  
|                  |                                           | • Thinking abstractly to determine appropriate sorts  
|                  |                                           | • Presenting data clearly  
| **Queries**      |                                           | Assists teachers in  
|                  |                                           | • Presenting data to students in an easy-to-use format  
|                  |                                           | • Demonstrating critical-thinking and alphabetizing skills  
|                  |                                           | • Preparing logical reports  
| **Archiving**    | Saved database files are easy means to use to  
|                  | • Query data  
|                  | • Access data  
|                  | • Update information  
|                  | • Sort data  
|                  | • Make reports |

- **Sorting**

Once entered, records can be sorted according to the data in any one or in multiple fields. Sorting arranges all records in a database into ascending or descending order based on the alphabetic or numeric characters stored in any field. In our library example, with this sort function, no matter how many additions or deletions to the library’s collection of books may occur, the database of holdings is always in alpha-
betical order and ready to use. And because all the data are stored electronically and automatically sorted, a record cannot be as easily removed or misfiled as is possible in a manual system.

- **Querying**

One of the most significant features of database management is the ability to find one single item of data from the potentially thousands of items in a database. When querying a database, the user instructs the software to look for and match targeted criteria. In our library example, to find a specific author’s name, you would, in a query operation, instruct the software to look in the Last Name fields of all records to find that targeted last name. Once it is found, the software returns the record in which the matching name resides. Despite the size of the database, any single item of information can be quickly and easily accessed. The PTA Membership Skills Builder on your Companion CD will demonstrate an Access query and give you practice using this feature.

- **Reports**

Whether you need to print a written summary of all of the records in the database or only those resulting from a query, most database management software packages contain report formats that ensure a professional and polished look. Reports are essentially templates built into the software to create output that is attractive and easy to read. Although it is possible to print the entire database, including all fields of all records, if the database is large, this can result in an overwhelming and difficult-to-read quantity of data. Using a report instead allows you to use the results of a database query to report only those records you want and then to identify and display only the desired fields within the records. In our library example, we can easily query the database to find any new additions to the library and then create a New Acquisitions Report that includes only the most pertinent information about each book. Your Science Database Skills Builder activity on your Companion CD will help you master effective reports as well as the other essential features of this ____________________.

- **Database Management in the Classroom**

Like word-processing and spreadsheet software, database management software, when creatively applied by educators, can be more than a productivity tool. It can become a creative teaching and learning tool when used to categorize, store, access, and retrieve large amounts of data or to demonstrate logic when creating a query. The In the Classroom feature gives several examples of such innovation. More ideas are available in On the Web! Activity 5.6.

### Presentation Software

Whether for teacher-led presentations or student-led class reports, presentation software can help to organize and enhance the delivery of content. **Presentation software** includes programs that are designed to create digital support materials for oral presentations. From a software perspective, presentations are a prearranged group of electronic slides that present one idea or theme after another. Completed presentations sequence and display these slides on a computer monitor, large-screen video monitor, or projection screen (see Figure 5.4). Presentations typically proceed through all slides in a linear sequence but the software has the capabilities needed for nonlinear, hyperlink-driven sequencing. These programs, originally designed for use in business as a sales and presentation tool, have been adapted by educators to assist the communication process by providing electronic visual displays that enhance verbal delivery.

Presentation software includes a wide range of capabilities in one typically very easy-to-use package. The presentation software Skills Builders on your Companion CD
provide both demonstration and practice in the use of these features. The most common features of presentation software are summarized here.

• **Multimedia Elements**

The individual slides in a presentation slide show can contain a number of multimedia elements including text, graphics, animation, sound, and video clips. The software can thus create a presentation appealing to the variety of learning modalities found in a typical audience of learners. The slide show as a whole may also contain multimedia elements that tie the slides together, adding interest and excitement to the presentation. Each multimedia element included in a presentation can be constructed from scratch or copied from other sources and easily pasted into slides.

• **Wizards and Templates**

Although multimedia presentations of this complexity may seem difficult to create most presentation software programs include built-in wizards that help even a novice computer user to create very professional and attractive presentations. In addition, the software includes a variety of slide templates with designer formats already created and ready to fill in. For busy teachers who use these templates, the design tasks are already done and only the content needs to be added.

• **Resource Libraries**

Although art, photos, and animation can be created or scanned for inclusion in a customized presentation, presentation software also offers useful libraries of multimedia from which to choose. Electronic clip art, animation, sound, and video libraries are typically included on the presentation software CD-ROM. These resources and built-in help features assist any user in creating professional-looking slides. With minimal training, educators and students alike can create and display complex and high-quality slide show presentations using just the software’s library resources.
Many presentation software programs include hypermedia features that make them seem more like multimedia authoring software than presentation tools adapted from business. Such programs include hyperlink capability via buttons to hyperjump (move directly to a target slide) to out-of-sequence slides, other slide shows, or even other software. Adding a hyperlink to a word, image, or button is as simple as clicking on a toolbar button and typing in the slide number or Internet address you wish to jump to.

**Animation**

Many presentation software packages also come with built-in options for dramatic special effects that can be applied to the moment of transition between slides or to the way bulleted items appear on a slide. Such animation schemes add visual interest and excitement to the concepts presented in text on the screen. Sound effects may also be included with animation to add auditory interest as well.

**Printing**

In addition to displaying the presentation itself, presentation software typically includes a variety of printing options for the presenter. Once the presentation is created, a hard copy can be printed and copied for distribution to the viewers. A presentation can be printed out as an outline, as a speaker’s note pages, or as customized audience handouts displaying anywhere from one to six slides per page. In addition, with a color printer and transparency film, each slide of the presentation can be printed out as a transparency for use on an overhead projector.

**Display Options**

In addition to a presenter-controlled display, presentation software provides alternative display options. A presentation can be set to display itself as a timed, self-playing slide show that will run without assistance by either the presenter or the viewer. This is a particularly useful feature to use for a self-guided display in a classroom center or in a library to guide students as they begin a group or individual task.

**Presentation Software in the Classroom**

One of the most successful applications of presentation software takes presentation preparation beyond helping an educator prepare an effective lecture. Presentation software is especially valuable when used by students to create support materials for
their own presentations. The software can help students organize their thoughts into manageable and logical chunks as a result of the automatic limitation of information displayable on any given slide. Further, discrimination and critical thinking are applied as the students review the quantity of material they have found in their research and then pare it down and identify key elements. Finally, as a by-product of using presentation software in this way, students gain valuable experience with multimedia-type software and with basic computer and software skills. Students enjoy and can be highly motivated by the software component of their report project, which in turn leads to improved retention and learning.

With the inclusion of the multimedia elements of text, sound, graphics, animation, special effects, and audio and video clips, these high-end presentation programs become essentially hybrid authoring systems. You will find that these packages are useful for anything from creating a transparency to developing multimedia tutorials.

### TABLE 5.6 PRESENTATION SOFTWARE IN TEACHING AND LEARNING

<table>
<thead>
<tr>
<th>Presentation Software Feature</th>
<th>Application to Professional Tasks</th>
<th>Application to Learning Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SLIDES</strong></td>
<td>• Allows for the creation of a sequence of screens that present content and information</td>
<td>Assists students in • Thinking through and organizing logical reports • Preparing support materials for oral reports</td>
</tr>
<tr>
<td></td>
<td>• Individual screens can be printed on transparency film for use with an overhead projector</td>
<td>Assists teachers in • Creating customized presentation of content • Creating transparencies • Presenting professional reports to colleagues</td>
</tr>
<tr>
<td><strong>GRAPHICS</strong></td>
<td>Allows for the addition of graphics, charts, and photos to illustrate content</td>
<td>Assist teachers and students in presenting visually rich content</td>
</tr>
<tr>
<td><strong>MULTIMEDIA</strong></td>
<td>Provides tools to include audio and video files as a component of individual slides</td>
<td>Assists students in • Adding multimedia to the presentation of content • Adding elements to presentations to address diverse learning styles</td>
</tr>
<tr>
<td></td>
<td>Provide tools for non-sequential linking of individual slides to allow for individualized exploration of content</td>
<td>Assists students in • Critical thinking, organizing, and planning content • Creating individualized study tools and reports • Presenting data clearly</td>
</tr>
<tr>
<td></td>
<td>Provides for customized output options</td>
<td>Assists teachers in • Preparing tutorials and electronic flash cards • Individualizing instruction</td>
</tr>
<tr>
<td><strong>HYPERLINKS</strong></td>
<td>Provides easy-to-use tools to add professional looking layouts and exciting special effects to slide presentations</td>
<td>Assists teachers and students in presenting professional looking and stimulating presentations and reports</td>
</tr>
<tr>
<td><strong>PRINTING OPTIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LAYOUTS AND SPECIAL EFFECTS</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
On your Companion CD, you will be able to see and try activities that utilize the many features of presentation software. These activities feature Microsoft PowerPoint, one of the leading presentation software packages available today.

If “a picture is worth a thousand words,” as the saying goes, the popularity of presentation software integrated into the curriculum is well justified. A cursory look at a few actual classroom projects in the In the Classroom feature reveals a wide range of possibilities for taking presentation software beyond its role as a productivity tool and using it as the means to an invigorating revitalization of instruction. Many more ideas can be found by completing On the Web! Activity 5.8.

### Integrated Productivity Packages

As you have learned, productivity software is often packaged in application suites of programs that share a similar look and feel. Office productivity software bundles, such as Microsoft Office, are examples of this distribution format. Occasionally, however, software vendors integrate three distinct software applications (word processing, spreadsheets, and database management) into a single comprehensive blended application. These combined programs are called integrated productivity packages. Individual software components of integrated packages include many but not all of the capabilities of the stand-alone application packages. Typically, an integrated package contains the most popular and widely used components of each major type of productivity tool (see Figure 5.5). These are combined together in a single easy-to-use software program. Many schools opt for an integrated package for classroom use because many of the advanced features of office software are used only occasionally by educators, and combined packages are easier to learn and use than separate pro-

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**IN THE CLASSROOM**

Pointing the Way: Presentation Technology

With Heather Tietz found a way to use PowerPoint to stimulate the interest of her fifth-grade students in the expository writing assignment given annually. The assignment was to research and write a report consisting of multiple paragraphs on a United States state. The time devoted to this project spanned three months, December to March. Ms. Tietz saw a way to transform the assignment from being boring to being fun by having her students use the computer lab and prepare PowerPoint presentations.

In their initial research, the students found material from different sources, in this case, books, web sites, and online reference sites. They used phrases in their notes—no sentences, to prevent plagiarism—which were written on index cards they would use to prepare their PowerPoint slides. The students then took the cards to the computer lab, where, after half an hour of instruction, they were ready to begin creating their presentations. The note phrases served as a starting point for the creation of the slides. With the outline created via PowerPoint, students could add visuals such as clip art and word art to make the slides attractive. The slides were then used as the basis for their written research papers. For Open House, Ms. Tietz placed the PowerPoint presentations on the classroom computer for the students to show their parents.

In Astoria, Oregon, the students in Mike Baker’s accelerated biology class at Astoria High School pursue studies of their environment near Ft. Clatsop, the site of Lewis and Clark’s headquarters during the winter of 1805–1806. Mr. Baker is involved in the Lewis and Clark Rediscovery Program, which encourages combining teaching history and science in a technology-enriched curriculum. His students collect data on the water quality of the Young’s River Estuary and share their findings with other students who are part of the GLOBE international environmental program (http://www.globe.gov) and with adults in the Lower Columbia Estuary Group. In collaboration with the latter group, students create electronic presentations to enhance the oral reports they deliver. Mr. Baker says his “tech-savvy kids” enjoy “making a contribution through science” to both groups.

grams. Typically, integrated productivity software is a more economical purchase for a school. Its reduced cost is reflected not only in the initial price of the software, but also in the time it takes to train people to use it. One of the chief advantages of an integrated productivity package is that you have to learn only one comprehensive software package rather than having to learn three individual packages. Furthermore, little of the functionality that the average educator needs is sacrificed in these streamlined applications.

Whether using a productivity suite or an integrated package, it is important to carefully review and evaluate software before purchasing it. The Productivity Software Evaluation Rubric (Table 5.7) will help you make a considered decision before selecting productivity software.

**Evaluating and Using School and Classroom Management Support Software**

The second major category of administrative software is school and classroom management support software. This type of software assists educators in accomplishing the many tasks associated with the day-to-day management of their classrooms or their schools. Whether the task is keeping an alphabetized grade roll, taking attendance, or creating an up-to-date seating chart, management support software is available to make the task easier.

Management support software is written for use at the district and school levels and by the individual classroom teacher (see Figure 5.6). Implemented at the district level, management software can offer many advantages. Software implemented by the district and offered to all schools and classrooms via networks can provide a standardized platform for entering and tracking student data. Furthermore, such software
often has the option of interfacing with the web. Web-enhanced districtwide management software can make student grades stored in a teacher’s electronic gradebook accessible to the students’ parents by means of a password. District-level software can also track attendance for school, districtwide, and state reporting purposes. When implemented district, management software expands the capabilities of similar software used in individual classrooms.

School-level management support software typically includes customized software that helps the district track district-wide enrollment, manage finances and budgets, and report on its operations both internally and externally. For example, schools designed with a computerized attendance system may have the teacher workstation in the classroom configured so that the teacher can report attendance by entering it into the school management software on the networked computer. The attendance data is then collected with that from other schools across a district and tallied daily. This type of districtwide application allows every school to maintain and access up-to-date and accurate information on enrollment, expenditures, and attendance.

<table>
<thead>
<tr>
<th>TABLE 5.7</th>
<th>PRODUCTIVITY SOFTWARE EVALUATION RUBRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOFTWARE:</td>
<td>DESCRIPTION:</td>
</tr>
<tr>
<td>VENDOR:</td>
<td>COST:</td>
</tr>
<tr>
<td>NOTES ON USE:</td>
<td>Please rate the features below for each piece of software. Next to each of the items in the rubric, check the box that best reflects your opinion.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Feature</th>
<th>1 Poor</th>
<th>2 Below Average</th>
<th>3 Average</th>
<th>4 Above Average</th>
<th>5 Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>Documentation is excessively technical and/or difficult to follow</td>
<td>Documentation is generally understand-able but not very user-friendly</td>
<td>Documentation is user-friendly and reasonably easy to follow</td>
<td>Clear documentation that is logical and easy to follow</td>
<td>Very clear, user-friendly documentation that leaves no questions</td>
</tr>
<tr>
<td>Technical support</td>
<td>No local or toll-free telephone support available</td>
<td>No local support; phone support available for an hourly fee</td>
<td>Local support and phone support available for modest fees</td>
<td>Local tech help available for modest fee; no charge phone support</td>
<td>Local help and toll free support readily available at no charge</td>
</tr>
<tr>
<td>Multiple users</td>
<td>Cannot be used by more than one user</td>
<td>Usable by multiple users if per-user licensing is purchased</td>
<td>Payment of a relatively small fee allows some users</td>
<td>No additional fee but allows addition of up to 10 users</td>
<td>Comes with permission for multiple users</td>
</tr>
<tr>
<td>Help features</td>
<td>Few or no help features available</td>
<td>Help limited to a Help or Read-Me file on installation CD</td>
<td>Clicking a Help button provides on-screen assistance with common problems</td>
<td>Help button is content-sensitive and provides clear help</td>
<td>Highlighting and clicking area of difficulty brings up a related help feature</td>
</tr>
<tr>
<td>Tutorials</td>
<td>No tutorials provided</td>
<td>Tutorials may be ordered for a fee</td>
<td>Limited tutorial provided on CD or may be requested without charge</td>
<td>Tutorials offered as an online option or on CD</td>
<td>Extensive online and CD based tutorials provided</td>
</tr>
</tbody>
</table>
At the classroom level, management support software makes managing class rolls, student information, and class reporting easier. Such software often includes a variety of tools packaged together that have the same look and feel. It is also often able to transfer data seamlessly between components. These packages contain programs that help the teacher create student rolls (often with a wide range of built-in grading functions), assist in making and maintaining seating charts, help in attendance tracking and reporting, and provide a statistical and graphing component for assessment feedback (see Figure 5.7). Teachers using one of these software tools might begin the term by entering their students’ names into the class roll component of the program and then generating an alphabetical class seating chart, a daily attendance report, and summary reports of both grades and attendance whenever interim reporting is necessary. Some packages even interface with district computers so that teachers can simply download their student rolls directly from the district computers rather than having to enter the initial data by hand. Management support packages are also often customizable so that all teachers using these tools can work with a format that is comfortable for them.
Portfolio Assessment Software

For teachers who regularly use portfolio assessment, an alternative type of assessment for tracking student progress, classroom management support tools provide useful assistance in the many and sometimes complex tracking tasks required. Portfolio assessment is a type of performance assessment that enables the teacher to assess competencies on the basis of a collection of student work rather than by using test scores. Portfolio assessment software provides the teacher with the tools necessary to document student achievement. Typically, these tools include portfolio formats and checklists and the ability to add comments and create custom reports. Some portfolio software tools also offer the teacher and student the option of maintaining portfolios in an electronic format with the capacity to electronically “snapshot,” view, and collect student work to share with parents. For special education teachers, alternative assessment software tools include those that generate, track, and produce reports for required individual education plans (IEPs) for special needs students.

Whether portfolio software is designed for hard copy or digital output, the powerful features of this type of management software offer support for the authentic assess-
ment of student achievement. Although each vendor adds some unique options, electronic portfolio software will typically include the following key features:

- **Organization by Standards and Competencies**
  The goal of a portfolio is to create a collection of student work, teacher commentary, and other files that evidence student progress and achievement. Portfolio assessment software packages offer a variety of ways to organize and store examples of student work as well as your assessment of it. The software usually offers teachers a way to define specific content areas or other academic categories and then identify related standards and competencies. Copies of student work and its evaluation can then be organized according to the competencies it evidences. Over time, organizing and

**Figure 5.7**
Sample GradeQuick Screens
Classroom management software helps teachers maintain class grades, seating charts, and attendance.
storing longitudinal records in this manner offers a cumulative view of student achievement over the course of an academic year or from year to year.

- **Observations**

  Portfolio assessment software often includes a way to record observations of student behaviors and notations on academic progress. Using either standard or teacher-defined commentary, observation entries offer teachers an opportunity to record student evaluations and comments related to them.

- **Multimedia Samples**

  Many portfolio assessment software packages include the ability to record images and audio and video samplings of student works. Audio-clip recordings of students reading standard passages or a sample of a student-created PowerPoint presentation offer multimedia evidence of current student progress.
• Customization
Since every school district has its own unique standards and assessment guidelines, most portfolio assessment software is customizable to address specific standards and to assess student work using the district’s criteria. Legends identifying standards and assessment methods are often definable by teachers so that their unique grading and assessment notes match the requirements of their school or district.

• Hyperlinks
Some portfolio assessment software provides the capability of creating links that can be used to navigate the electronic portfolio of a student’s work. Often related to standards, benchmarks, or competencies, these links offer an accurate and holistic picture of a student’s achievement relative to target achievement. Hyperlinks also offer an intuitive and easy-to-use method for examining a portfolio’s contents.

Electronic portfolio assessment software may be dedicated software designed specifically to create e-portfolios, or it may be multipurpose software adapted to creating portfolios. Several popular multimedia and authoring software packages can easily be adapted to portfolio generation. For more precise and complete e-portfolios, such as those directly related to targeted standards or those that conform to district guidelines (such as IEPs), dedicated portfolio software may be required.

Evaluating and Selecting Support Software
School or districtwide management support software may be custom-tailored to meet the needs of the district. Educators’ interaction with this type of districtwide software may be limited to attending the necessary training sessions to ensure that they know how to use the software effectively. Classroom management software, however, requires careful review and evaluation on the part of the teachers who will be using it. Some classroom management systems are offered via freeware or shareware from the Internet or other software sources. Others may be inexpensive packages available to educators who are using a vendor’s other software titles. Still others may be substantial but expensive comprehensive classroom management solutions. Although it is tempting to decide quickly to select freeware or shareware rather than the expensive software, there is a longer-term investment that must be considered. Whichever software is selected, educators must spend precious time learning to use it and entering data into it. In addition to this initial time investment, once student records are stored in a particular software format, the format may be difficult to change. If, after the initial selection of management software, an educator decides that the program does not have all of the desired components, changing to another software package may require reentering a great deal of data. Thus, even more time is invested. As with all software acquisitions, it is important to make a careful and thoughtful selection at the onset. The Manage Classroom Management Software Evaluation Rubric (Table 5.8) will help you evaluate and choose the most appropriate classroom management software.

Software, Teaching, and Learning: A Practical Approach
To end this discussion of administrative software, let us return to the hypothetical situation presented in the chapter preview. Imagine that your school district has decided to make a major technology initiative for the twenty-first century. As a result, you have just been given five new computer systems for use in your classroom. The computer-support department tells you that you have a software budget with which you can
Still, even armed with an understanding of the role of administrative software in teaching and learning, with so many types of software packages available, a busy educator is faced with a significant demand of time and energy just to explore and decide on software for his or her classroom. Indeed, the tasks of researching, evaluating, and mastering the features of even the most appropriate software packages might seem daunting, but they are entirely necessary. Technology resources are limited in most school districts. Wise use of these limited funds is a skill every computer-using educator must master. This problem is no different from many others faced by educators ded-

<table>
<thead>
<tr>
<th>SOFTWARE:</th>
<th>DESCRIPTION:</th>
</tr>
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<tbody>
<tr>
<td>VENDOR:</td>
<td>COST:</td>
</tr>
<tr>
<td>NOTES ON USE:</td>
<td></td>
</tr>
</tbody>
</table>

To help you determine the value of a piece of classroom management software that you want to evaluate, please rate the features listed below. Next to each of the items in the rubric, check the box that best reflects your opinion.

<table>
<thead>
<tr>
<th>Software Feature</th>
<th>1 Poor</th>
<th>2 Below Average</th>
<th>3 Average</th>
<th>4 Above Average</th>
<th>5 Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation instructions</td>
<td>Minimal or missing installation instructions</td>
<td>Instructions poorly written and somewhat difficult to follow</td>
<td>Instructions fairly clear and complete</td>
<td>Clear and user-friendly written instructions</td>
<td>Step-by-step installation instructions appear when the CD is inserted</td>
</tr>
<tr>
<td>Site licensing provisions</td>
<td>No licensing available</td>
<td>Somewhat expensive and/or limited site licensing</td>
<td>Site licensing available at reasonable cost</td>
<td>Low licensing rates for educators</td>
<td>Multiple educators may use without paying a fee</td>
</tr>
<tr>
<td>Technical support</td>
<td>No local or toll-free telephone support available</td>
<td>No local support; phone support available for an hourly fee</td>
<td>Local support and phone support available for modest fees</td>
<td>Local tech help available for modest fee; no-charge phone support</td>
<td>Local help and toll-free support readily available at no charge</td>
</tr>
<tr>
<td>Ease of updates</td>
<td>No provisions for updates</td>
<td>Must purchase new versions; most data will transfer to new version</td>
<td>Updates for less than cost of new versions; data transferrable</td>
<td>Minimal fee for updates; data fully compatible</td>
<td>Free updates available online; seamless transfer of data</td>
</tr>
<tr>
<td>Tutorials</td>
<td>No tutorials provided</td>
<td>Tutorials may be ordered for a fee</td>
<td>Limited tutorial provided on CD or may be requested without charge</td>
<td>Tutorials offered as an online option or on CD</td>
<td>Extensive online and CD-based tutorials provided</td>
</tr>
</tbody>
</table>

augment the collection of district productivity software from which you can choose. Will you know what to do? Will you know which types of software will best accomplish the tasks you need to do? Will you know what to select to improve your productivity and make the administrative tasks associated with your job easier? Perhaps now you are better able to tackle these questions.
icated to executing their professional responsibilities effectively and efficiently and to making the learning experiences of their students as complete and exciting as possible. From the discussion of software on the preceding pages, it is clear that administrative software can facilitate a wide variety of teaching tasks in the classroom, in your school, and across the district. It is up to you to become adequately familiar with this type of software to make the time you devote to administrative tasks as productive as possible.

In the next chapter, you will explore the other major category of software used by educators: academic software. There you will learn about the wide variety of academic software possibilities that you can integrate into teaching and into learning. For computer-using educators, knowledge of administrative and academic software packages and the hardware necessary to run them is the foundation for the effective use of computers in teaching and learning. You are well on your way toward establishing the firm foundation you will need when you teach.
KEY TERMS

academic software 000
administrative software 000
classroom management support software 000
database management 000
electronic spreadsheet 000
freeware 000
integrated productivity packages 000
macro 000
presentation software 000

productivity software 000
school and classroom management support software 000
shareware 000
templates 000
what-if analysis 000
wizard 000
word-processing software 000
WYSIWYG 000

STUDENT ACTIVITIES

CHAPTER REVIEW

1. How do academic and administrative software differ?
2. What is productivity software? How can it be adapted to benefit teaching and learning? Give specific examples.
3. Name three types of software that might be included in classroom management support software. Describe an application for each.
4. What is desktop publishing? How does it differ from word processing? How is it the same?
5. What are the key features of word-processing software? How might you use each in completing administrative tasks?
6. What are the advantages and features of electronic spreadsheets? How do you see them as a benefit in an educational environment?
7. Define database management software and describe how you might use it to help you in your teaching responsibilities. How might you construct a learning assignment for your students that uses this productivity tool?
8. What is presentation software?
9. Describe the difference between an integrated productivity package and a productivity suite.
10. Why is it important to take the time to fully evaluate administrative software before buying it?

WHAT DO YOU THINK?

1. List the top ten things you think you need to know about administrative software to be an effective computer-using educator. Why is each of these things critical in your technology decision making?
2. For most productivity software, many see the ability to save data in electronic format as a significant advantage over hard copy. Do you agree that this characteristic of productivity software is of value in education? Explain why or why not.
3. There is some concern over the use of database software for private student records. How might using a database management system make it easier to violate the privacy of student information? Do you think the benefits of such systems outweigh the risks? Explain your position.
4. Some educators think that it is too much trouble to learn the administrative software packages that might assist them in completing their required paperwork. Others believe that the benefits in productivity and editability of records outweigh the effort it takes to master the programs. What do you think?

**LEARNING TOGETHER!**

The following activities are designed for learning groups of three to five students.

1. Assume that you and your learning group make up the technology committee for your school. The committee has been assigned the task of deciding whether to upgrade or change the productivity software application suite your school has used over the past two years. Create a list of all of the issues that must be considered before making this decision. Then itemize the list and weigh each item in terms of its priority in importance to teaching and learning. Finally, describe the process you would go through to use the list and make your software decision.

2. Have each member of your learning group interview a teacher who uses any of the four major types of productivity software. Ask the teacher how he or she uses the software to help perform teacher management tasks and how he or she uses it to help children learn. Compare the interview responses with those of the other members of your group. Be prepared to share what you have learned with your peers.

3. You and your group members are team-teaching a science unit on climate to the grade level of your choice. Describe how you might integrate each of the four main types of productivity software into your unit. Create an instructional design, using the dynamic instructional design model you learned in Chapter 2, that articulates your unit.

**HANDS-ON!**

1. Examine the features of a productivity software suite or classroom management application. Using the evaluation rubric for the type of software you select, determine its potential for your use. Word-process a description of how you might use this type of software in teaching and learning. Be sure to add graphics and word art, if available, to help communicate your ideas. Need more practice? For word-processing Skill Builders, check the text web site: [http://www.ablongman.com/lever-duffy](http://www.ablongman.com/lever-duffy), or your Companion CD.

2. Electronic portfolios enable you to capture and present student work for a more authentic and holistic assessment of progress and achievement. Visit three different electronic portfolio web sites, including an e-portfolio software vendor web site, a publication about electronic portfolios in the classroom, and a web site presenting samples of student portfolios. After visiting the sites and becoming more familiar with the use of electronic portfolios, create an e-portfolio template of your own for the presentation of your future students’ work using the software of your choice. Share the portfolio template with your peers.

3. Using the productivity software of your choice, create lesson support materials that explain the steps you should take to make effective hardware or software buying decisions. You may create one of the following: a rubric or publication with a word processor; a technology budget using an electronic spreadsheet that offers what-if analysis; or a presentation that guides potential purchasers through technology decision making. Share your materials with your peers.
As I pondered the mammoth summer school task before me, I realized that it was time to try out a type of productivity software I had learned about in college and used once before: database management. I decided to use my Macintosh LC II computer and Microsoft Works 3.0. Works includes several integrated programs that work together for ease of use. These programs included a word processor, a spreadsheet program, and the database program I needed.

About ten years earlier, I had used AppleWorks to track students in Chapter 1, a federally funded remedial program. The database enabled me to keep alphabetical lists of the students and their criteria and to easily sort the students by grade level and/or classroom teacher. While this was a simpler type of database, I thought I might be able to use the more powerful Works software to handle the more complicated and extensive data that I now needed to maintain and manipulate.

There were approximately 700 potential summer school students in the school population, including the additional gifted students from my school and the three neighboring schools. I had to plan for the number of classes, classroom space, instructional materials, and teachers that I would need during the summer. I needed to make the children and their parents aware of the summer school requirement for those who had not met grade-level expectations. I also needed to publicize the various enrichment classes that were available to the gifted students, and I had to keep track of the two classes that each student selected.

Staying aware of each at-risk student’s status was an additional monumental problem because the checklist of indicators for mastery of the expectations was reviewed regularly throughout the period from January to May. Preparing regular reports to reveal the number of students and the required instructional area (reading, writing, and/or math) that they would need to take was just too time-consuming to do by hand. Technology had to play a role in the implementation of this year’s summer school planning.

After digging out the Microsoft Works documentation and reviewing the chapter on the database application, I decided that it would be necessary to create two database files—one for the students who would be required to attend summer school to master the grade-level expectations and one for the gifted students. The types of data and the way that the data would be manipulated were totally different for the two groups of students.

In database management, one of the most important steps is defining the type of information (fields) that needs to be included. In addition to the usual fields for first and last names, teacher, and grade, I decided I would need fields for the indicators for mastery of the expectations and the various dates that had to be maintained throughout the identification process. For the gifted summer school program, I could omit the fields for eligibility criteria; but I needed to enter the school that each student attended and the first, second, and third choices for the two enrichment classes that each student wanted.

I made sure that the database template for the summer school programs was provided to each classroom teacher. A miniworkshop was provided to the teachers, so they would know how to enter their students’ data. At the end of the second quarter, the teachers were able to print a full report from the database. Using that report, I was able to generate a notification letter to parents with the report cards, and the date of the letter was entered in the database. The teachers were proud of themselves for being able to use this tool, and I was happy to see how much easier the summer school preparation process was going than in previous years.

As the third quarter came to a close, district administrators requested summer school projections from the schools. This information was required to plan for bus drivers and other budget-related items such as teachers’ salaries, clerical support, and lunchroom facilities. After teachers had updated the records based on third-quarter information, I asked them to send their databases to me as an email attachment. From these emails I was able to copy and paste the records from the databases into one master database file. With just a little more manipulation of the data, I was able to print the reports requested by the district administrators. As the end of the year approached, class lists were formed, names were merged into form letters, and parents were sent the final official notification about summer school.

I used the same process for the summer school gifted program. The assistant principals of the other schools sent their students’ data in typed lists. I entered the data in the database and generated personalized letters to the students letting them know the classes from which they could choose for the summer program. As the students’ responses were returned, I entered their choices in the database and began the process of identifying the most requested classes. When this was completed, I added two final fields in which I could enter each student’s two classes. The students’ names and classes were merged into form letters. These letters were sent to the students’ schools for distribution.

Adapting database management software to the summer school planning process proved to be one of my best ideas yet. The process was smooth and easily managed. The data was at everyone’s fingertips just when they needed it. Reports, letters, and schedules were easily generated. This one component of Works saved countless hours of work for me and for our teachers. It was the easiest summer school planning experience I ever had, and all thanks to the application of a piece of software I already had on my office computer.
As I continued in the role of assistant principal, I often marveled that many of my colleagues were not using this fabulous tool to expedite their routine tasks. I shared my success in using this tool to maintain massive amounts of important data, produce required reports for districtwide planning, and provide timely information to parents. In successive years, my basic database was adapted and shared with the assistant principals in the 100+ elementary schools across the district.

This experience taught me to always look for technology solutions, especially for those time-consuming tasks that all educators must face. Sufficient time to do all that we need to do is one of the most pressing everyday concerns for educators. Sometimes it is just a little knowledge or particular technology skill picked up in college that ends up providing some of the most useful and incredible solutions to the many challenges faced on the job.

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